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**B7E ESB**

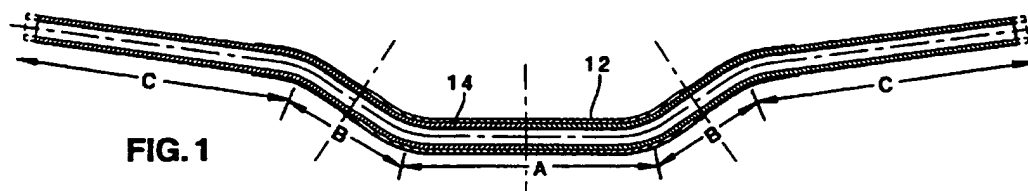
(56) Documents Cited  
**GB 0442238 A GB 0402573 A US 5199322 A**  
**US 5119690 A**

(58) Field of Search  
UK CL (Edition O ) **B7E ESB**  
INT CL<sup>6</sup> **B62K 21/12**  
Online: **WPI**

(54) Abstract Title  
**Handlebar**

(57) A handlebar for a motorcycle or similar vehicle comprising at least one outer tubular sleeve (12) surrounding an inner tubular member (14). Its multi-layer construction limits crack propagation and allows use of two or more different materials.

With a two-layer construction, the inner tubular member is preferably of constant diameter and constant wall thickness throughout, whereas the outer tubular sleeve is preferably of constant wall thickness in a central region (A) and of constant, yet smaller wall thickness in the handgrip regions (C), with a reduction in wall thickness taking place over a very short distance in the intermediate bent regions (B).



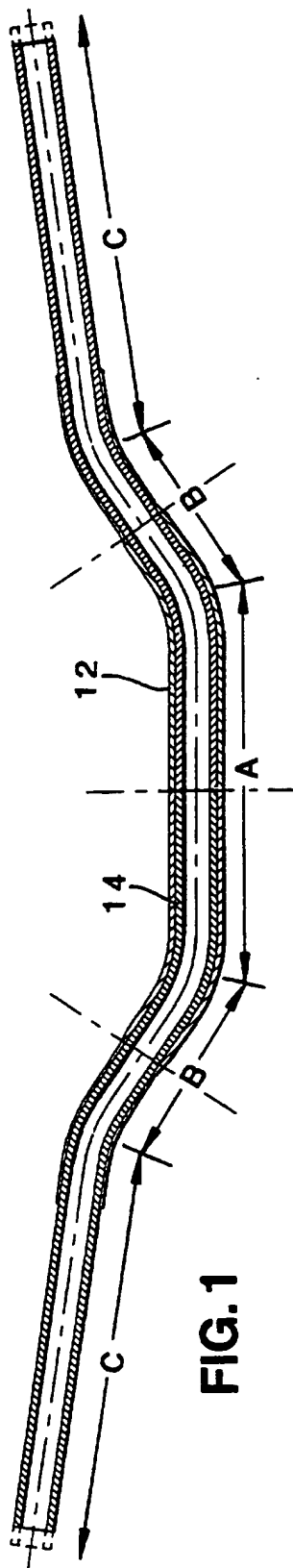


FIG. 1

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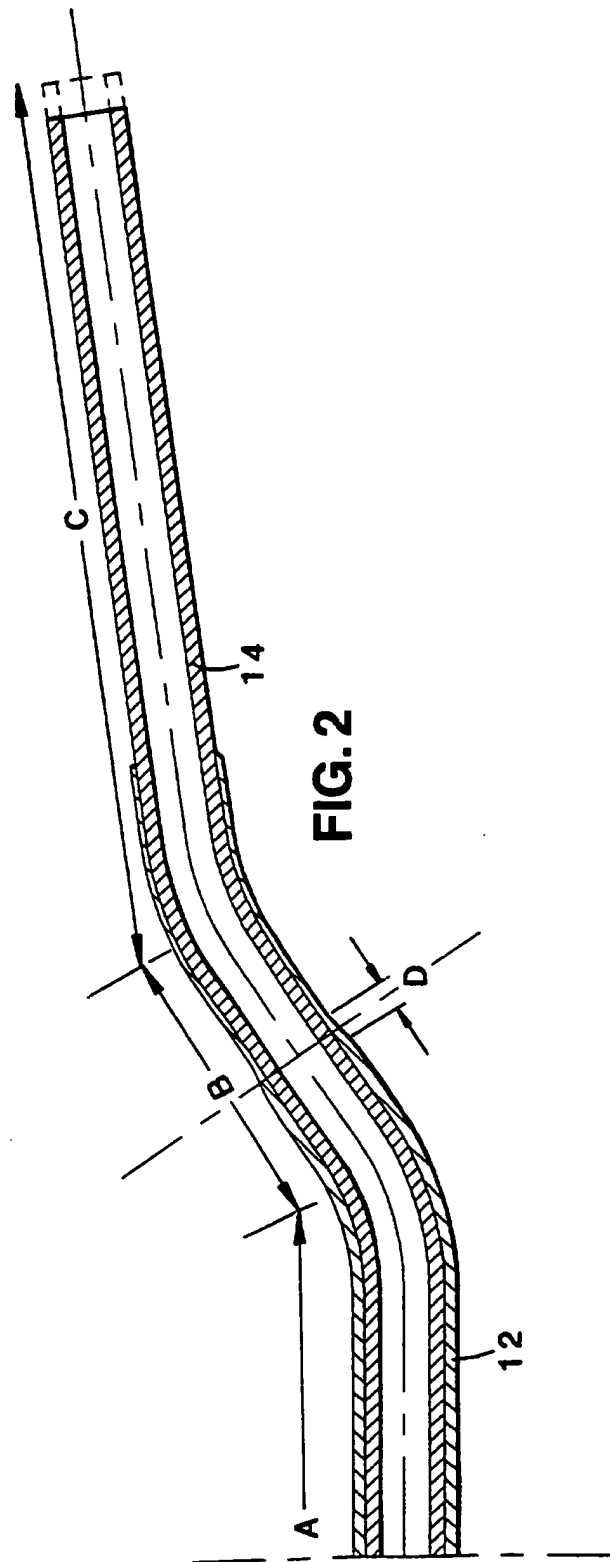


FIG. 2

**HANDLEBAR - P56741**

This invention concerns an improved construction of handlebar for a bicycle, motorcycle or other two wheeled power vehicle or all terrain vehicle (including watercraft and snowmobiles).

Hitherto handlebars of motorcycles and cycles have comprised a single length of tube appropriately bent to provide a central region and respective handgrip regions, the former being clamped at one or two positions to form a connection to the main cycle frame via an intermediate top yoke or stem. For added strength it has been conventional to provide a brace (sometimes called a crossbrace) spanning the central region of the tube. An alternative to this has been the provision of a tubular handlebar having a greater external diameter in its central region, said diameter reducing to the handgrip portions of the tubing.

US specification number 5257552 discloses an integrally formed unitary hollow tubular handlebar of the latter type wherein the wall thickness is greatest and constant in the central region, least and constant in the handgrip portions, and gradually tapering from the greatest to least thickness in respective bent portions which extend between and connect the central region and the respective handgrip portions.

An object of the present invention is to provide an improved construction of handlebar which would have greater resistance to

impact damage or fatigue failure than any known style of motorcycle or cycl handlebar, whil still obviating the need for a brace or crossbrace.

The present invention proposes a handlebar which comprises at least one outer tubular sleeve surrounding an inner tubular member.

The use of two or more layers of material to provide the tubular body of the handlebar has numerous advantages.

Firstly, it limits crack propagation upon severe impact, since a crack in one of the layers will not spread into the other layer or layers. This is important in preventing complete failure of the handlebar in the event of a crash - crashes being frequent in the sport of motocross and other activities involving off-road motorcycles and other all terrain powered vehicles. The use of two or more layers of material also helps to stop cracks propagating because of metal fatigue through long term use.

Secondly, it allows use of two or more different materials so that, for example, a stronger, but more notch sensitive material can be used for the inner member or members, and a more ductile but less notch sensitive and less brittle material with better fatigue resistant properties can be used for the outer sleeve or sleeves. This should be particularly useful in minimising stress and impact damage at the locations where the handlebar is clamped to the top yoke or stem connected to the main cycle frame.

Perhaps it may be suitable, in this respect, to use two or more different grades of aluminium, but numerous other combinations of metals or other materials would be possible.

The invention will be described further, by way of example, with reference to the accompanying drawing wherein:

Fig. 1 is a cross section of a preferred embodiment of the handlebar of the invention; and

Fig. 2 is an enlarged view of the right hand side of the embodiment of Fig. 1.

Referring to the drawing a preferred handlebar comprises an outer tubular sleeve (12) which is a snug fit around an inner tubular member (14). Both the sleeve (12) and the member (14) are formed of metal.

The handlebar is symmetrical and has a central region A which is straight. At each end of the central region A there is a respective bent region B. The distal end of each bent region B (i.e. the end remote from the central region A) leads, via another bend, to a respective handgrip region C. The lengths of these regions and their relative angles may vary depending on the type of cycle or motorcycle or other vehicle for which they are intended.

Throughout its entirety the inner tubular member (14) has

constant diameter and constant wall thickness. By way of example, the outer diameter may be 0.875 inches (22.23 mm) and the wall thickness 0.160 inches (4.06 mm).

The outer sleeve (12) is of a constant wall thickness in the central region A, and of a constant wall thickness in the handgrip regions C. However, its thickness in region A is greater than its thickness in region C. For example in region A its thickness may be 0.125 inches (3.18 mm). while in region C its thickness may be 0.0625 inches (1.59 mm). In certain short sections D of the respective bent regions B, the thickness of the outer sleeve (12) reduces from that in the central region A to that in the handgrip region C. The section D may be between 10 and 30 mm long, preferably 15 mm, so it is a steep, almost stepped reduction in diameter in this short section. In other embodiments it could be a more gradual reduction or a stepped reduction in diameter.

It will be noticed that the inner member (14) in the handgrip regions C extends a considerable distance beyond the outer sleeve (12). This may vary in other embodiments.

In manufacturing the handlebar the member (14) and the sleeve (12) will be formed separately of metal tubes, probably of different types of metal. The reduction in thickness of the sleeve (12) will be brought about prior to the insertion of the member (14). In this respect, the member (14) need not be a very tight fit in the sleeve (12). Thereafter they can be shaped

together by bending in conventional manner.

The invention is not limited to the details of the above described embodiment. Many variations are possible. In particular, the handlebar may be formed of more than two layers of material. In this respect, in cases where three layers of material are used, there may well be no requirement for reduction in thickness of the outer layer or layers. In other words, each of the layers may be of a constant thickness, but the outer layers may be successively shorter than the inner layer.

**CLAIMS**

1. A handlebar comprising at least one outer tubular sleeve surrounding an inner tubular member.
2. A handlebar as claimed in claim 1 wherein the inner tubular member is of constant diameter and constant wall thickness throughout.
3. A handlebar as claimed in claim 1 or 2 having a central region and respective symmetrical bent regions at each end of the central region leading to respective handgrip regions of equal length.
4. A handlebar as claimed in claim 3 wherein the outer tubular sleeve is of constant wall thickness in the central region and is of a constant, yet smaller wall thickness in the respective handgrip regions.
5. A handlebar as claimed in claim 4 wherein there is a stepped reduction in the wall thickness of the outer tubular sleeve in the respective bent regions.
6. A handlebar as claimed in claim 4 wherein a reduction in the wall thickness of the outer tubular sleeve takes place in the respective bent regions over a distance of between 10 and 30mm.



7. A handlebar as claimed in any preceding claim wherein the outer tubular sleeve is positioned symmetrically upon the inner tubular member.
8. A handlebar as claimed in any preceding claim wherein respective end regions of the inner tubular member extend beyond the ends of the outer tubular sleeve.
9. A handlebar as claimed in claim 3 wherein the respective handgrip regions of the inner tubular member extend beyond the handgrip regions of the outer tubular sleeve.
10. A tubular handlebar comprising at least three layers, each being of constant wall thickness, and the inner layer extending beyond the ends of the outer layer.
11. A handlebar substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

Amendments to the claims have been filed as follows

1. A unitary handlebar comprising an inner tubular member of constant diameter and constant wall thickness and at least one outer tubular sleeve surrounding the inner tubular member, both the inner tubular member and the outer tubular sleeve, or at least one of the outer tubular sleeves having a central region, bends at each end of the central region leading to symmetrical oblique regions, and further bends at the distal ends of the oblique regions leading to respective handgrip regions, in which respect the respective handgrip regions of the inner tubular member extend beyond the handgrip regions of the said outer tubular sleeve.
2. A handlebar as claimed in claim 1 wherein there is a single outer tubular sleeve which is of constant wall thickness in the central region and is of a constant, yet smaller wall thickness in its respective handgrip regions.
3. A handlebar as claimed in claim 2 wherein there is a stepped reduction in the wall thickness of the outer tubular sleeve in its respective oblique regions.
4. A handlebar as claimed in claim 2 wherein a reduction in the wall thickness of the outer tubular sleeve takes place in the respective oblique regions over a distance of between 10 and 30mm.

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5. A handlebar as claimed in any preceding claim wherein the outer tubular sleeve or sleeves is/are positioned symmetrically upon the inner tubular member.
6. A handlebar as claimed in claim 1 wherein there are at least two outer sleeves, each being of constant wall thickness.
7. A handlebar substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.



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Application No: GB 9701027.6  
Claims searched: 1-11

Examiner: Brian Denton  
Date of search: 12 March 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK Cl (Ed.O): B7E (ESB)  
Int Cl (Ed.6): B62K 21/12  
Other: Online :WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	US 5199322 (WA) see particular figure 3	1 2
X	US 5119690 (SHU) see lines 4-17 column 2 and figure 3	1-5 7
X	GB 442238 (NATIONAL TUBE) note figure 8	1
X	GB402573 (SADLER) whole document	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.